

centrum so short as the early caudals of *Acanthopholis*, and all differ in the neural arch, the transverse process, the absence of horizontal lateral ridges, and greater compression of the body of the centrum from side to side.

In birds the tail is not similar.

But among mammals of many kinds there is a closer approximation to the Dinosaurian tail in proportion, form, and detail of vertebræ than is seen in the crocodile, even the neural arch becoming singularly small in the Dinosaur. These mammalian resemblances, supposing them to be essential Dinosaurian structures, would tend to indicate a common parentage for Dinosaurs and Mammals in the ornithodelphian direction, and not that there were similar vital organs for the Mammalian and Dinosaurian types. And probably the time is near when the student of osteological synthesis, endeavouring to emulate the achievements of the astronomer predicting the orbits of new planets, will be able to characterize orders and perhaps whole classes of extinct and undiscovered animals from the evidence of their structures inherited in the types which survive.

EXPLANATION OF PLATE VII.

Fig. 1. Front view of the metapodium of *Acanthopholis platypus*.

Fig. 2. The proximal ends of the same metapodial bones.

These figures are half natural size, and from photographs by A. Nicholls, Cambridge.

XXXVIII.—*On the Young State of Fishes belonging to the Family of Squamipinnes.* By Dr. ALBERT GÜNTHER, F.R.S.

IN the first volume of the present series of this Journal (1868, p. 457) I described and figured a very small fish, 11 millims. long, under the name of *Tholichthys*. Its head was armed in a most peculiar manner (by large suprascapular, humeral, and præopercular laminae); and, although I had but little doubt that the appearance of old or mature examples would be different, I did not think it possible that the osseous plates behind the head would disappear entirely. I considered it to be the type of a Cyttoid genus.

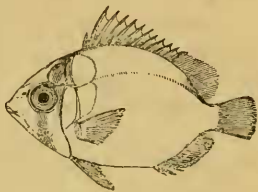
Since that time I have examined several other *Tholichthyes*. Lieut.-Col. Playfair obtained some from Zanzibar (where also the original example was discovered); but they were of the same small size, and did not differ from the first example, except that the dorsal spines appeared to be more numerous and apparently somewhat variable in number.

Surgeon Day found other similar fishes at Madras; but they

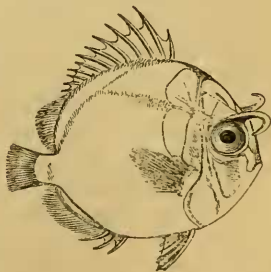
were considerably larger, viz. $1\frac{1}{10}$ inch long (= 28 millims.). Although they retained the peculiar armature of the head, the form of the body and fins had greatly changed, resembling now that of a *Chætodon* or *Holacanthus*; so that Mr. Day felt convinced that *Tholichthys* was the young of a genus of *Squamipinnæ* (Proc. Zool. Soc. 1870, p. 687).

It is my object in the present notice to show that this supposition of Mr. Day is quite correct. Unfortunately the specimen deposited by Mr. Day in the British Museum has been mislaid, so that I cannot avail myself of it for comparison with the specimens which I intend to describe here.

1. I have examined two specimens, 30 millims. long, of *Chætodon citrinellus*—one, in the British Museum, from the Feejee Islands, and the other recently obtained from Hr. C. Godeffroy. These examples show all the characters of that species: not only are the fins as well developed as in the mature form, but also the black ocular band and the marginal anal stripe are present. Yet these specimens still retain the scapular and humeral laminae, and the præopercular process projects to the root of the ventral. Comparatively, these laminae appear to be smaller than in *Tholichthys* of younger age; but this is merely in consequence of the greater development of the body in the more advanced stage, its growth being much more rapid than that of the head.



2. Not only *Chætodon*, but also other Squamipinnate genera appear to have a *Tholichthys*-stage. With the specimen of *Ch. citrinellus* mentioned above, Hr. Godeffroy sent another fish, represented in the accompanying woodcut, and now in the British Museum. The plates on the shoulder and præoperculum are as in the young of *Chætodon*; but the fish is distinguished besides by a remarkably long and curved horn above each orbit; a deep groove runs along the lower side of the horn. The numbers of the fin-rays are, D. $\frac{12}{25}$ and A. $\frac{3}{21}$. There are between 50 and 60 transverse series of scales on the body. Now, although it is possible that the horn above the orbit is also an excrescence lost in the more mature state of the individual, it yet reminds us of those species of *Heniochus* which are provided with more or less



developed orbital processes. Indeed *Heniochus monoceros* and *H. varius* approach our specimen very closely with regard to the numbers of the fin-rays. Yet, without further evidence, it would be hazardous to state whether this fish is a young *Chatodon* or *Heniochus*.

With regard to *Tholichthys osseus*, I have not been able to obtain specimens in a more advanced state of development and to determine the genus or species of which it is the young.

I have but little doubt that *Holacanthus* passes also through a *Tholichthys*-state, and that the præopercular spine by which this genus is distinguished is the permanent remains of the expansion of the præopercular angle, which in other allied genera disappears with age.

Our acquaintance with instances of fishes undergoing great changes in the earlier stages of growth becomes more and more extended. In many cases the young have been described as distinct genera: thus *Priacanthichthys* has proved to be the young of *Serranus*, *Cephalacanthus* that of *Dactylopterus*, *Dicrurus* of *Thyrsites*, *Nauclerus* of *Naucratus*, *Lampugus* of *Coryphæna*, *Stomiasunculus* of *Stomias*, *Porobronchus* of *Fierasfer*, *Acanthosoma* of *Orthogoriscus**, &c.; and I think that before long *Rhynchichthys* will be shown to be the young of *Holocentrum*, *Acronurus* and *Keris* that of *Acanthurus* or *Naseus*, and *Couchia* that of *Motella*.

XXXIX.—On *Scapia Phayrei*. By Dr. J. E. GRAY,
F.R.S. &c.†

I WAS very glad to observe that Dr. Anderson at last had had the head of the typical specimen of *Testudo Phayrei* prepared, as stated in the September number of the 'Annals,' and that Mr. Stoliczka had decided, on examination, that the skull is specifically identical with that I have described under the name of *Scapia Falconeri*. I therefore most gladly adopt the previous specific name, and shall henceforth call it *Scapia Phayrei*. This is very satisfactory to me, proving the skull to belong to a species that has never come under my observation in a more perfect state, and at the same time shows that Mr. Blyth and Mr. Theobald made a great mistake when they confounded that species with *Manouria emys*; and the latter, more inexcusable still, has confounded the most perfect specimen of *Testudo Phayrei* with *T. indica* of Gmelin.

* Dr. Lütken has informed me that *Ostracion boops* (Rich.) represents a still younger state of *Orthogoriscus* than *Acanthosoma*.

[† This communication was received on the 26th September—too late for insertion in our October Number.—W. F.]